The United States Air Force Minot and Taiwan Nuclear Weapons-Related Incidents: An Assessment

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EXECUTIVE SUMMARY

Background

- On August 31, 2007, a U.S. Air Force B-52 plane with the call sign "Doom 99" took off from Minot Air Force Base (AFB), North Dakota, inadvertently loaded with six Advanced Cruise Missiles loaded with nuclear warheads and flew to Barksdale AFB, Louisiana. After landing, "Doom 99" sat on the tarmac at Barksdale unguarded for nine hours before the nuclear weapons were discovered. Below you will read the details of that 36-hour period with six primary mistakes highlighted.

- While the Air Force was reeling from the investigations of the Minot incident, it was revealed that Taiwan had received sensitive components used on the Minuteman III intercontinental ballistic missile rather than the helicopter batteries it had ordered from the U.S., bringing to light a second nuclear-related incident.

- These two incidents resulted in six major investigations and studies.

- The studies cited, "a failure of leadership" and a significant "erosion of nuclear expertise" as primary causes of these incidents. Even after the 2007 incidents, the Air Force continued to experience senior leadership failures culminating with the Secretary of the Air Force (SECAF) and the Chief of Staff of the Air Force (CSAF) being forced to resign and six other senior officers either being fired or reprimanded.

- This report is the result of a year-long Air University research project funded by Headquarters Air Force, Strategic Deterrence and Nuclear Integration (A10). The study team was tasked with "researching and writing a case study to investigate how the Air Force can reinvigorate the handling, operation, and maintenance discipline of nuclear weapons that characterized nuclear operations standards and culture at the height of the Cold War."

- The goal of the study was to provide a deeper understanding of the context of internal and external forces that led to the Minot and Taiwan nuclear-related incidents. The methodology was to: conduct a literature review of existing studies, reports, policies, and procedures; hold workshops to review direction and findings, both at the operational and senior leadership levels; and conduct interviews with senior Air Force, Department of Defense (DoD) and national security experts who played a role in our nuclear mission between 1986 to the present.

- Through the workshops, interviews, and research, five factors were identified as the most significant root causes that set the stage for the two incidents.

Root Cause 1: Policy and Oversight Changes

- The evolution of national nuclear strategy and policy had a dramatic effect on the Air Force nuclear enterprise in four key areas: a lack of focus at the policy and strategy level; an aging and shrinking scientific community responsible for nuclear weapons development; a lack of awareness or understanding on nuclear-related issues in Congress; and the impact of arms control measures.

- The linkage between the perceived lack of national-level commitment to a "robust nuclear deterrent" by senior national security officials and its detrimental effect on the nuclear workforce was identified by previous studies.

- The problem was compounded by the integration and evolution of nuclear issues into the broader spectrum of weapons of mass destruction and growing requirement for the conventional wars being waged.

- The role of nuclear weapons in the national security strategy underwent a gradual evolution, which was highlighted in strategy documents after the events of September 11, 2001 changed the focus of security and deterrence. Terrorism and rogue state concerns ascended as the primary threats to the United States, dramatically altering the perceived utility of nuclear weapons in our national strategy.

- The political advocates of nuclear weapons programs are retiring from the scene and have been replaced in the Pentagon, Capitol Hill, and White House by leaders who do not focus on nuclear preparedness and nuclear deterrence as the most important issues of the day. This decline in the number of nuclear advocates and the clout they hold has reflected itself in the Air Force's lax approach that led to the Minot and Taiwan incidents.

Root Cause 2: Organizational Change and Operational Evolution

- Lack of attention, clarity, and financial support by the Office of the Secretary of Defense has been detrimental to the Air Force's nuclear enterprise.

- In addition to command and control of U.S. strategic forces, the Commander of U.S. Strategic Command was assigned numerous non-nuclear missions.

- Operation Desert Storm highlighted American dominance in conventional weapons, specifically in the areas of weapons-guidance and communications technologies.

- General McPeak was Chief of Staff at a time when the economy was in decline and the services were being forced to make dramatic budget cuts. General McPeak's vision was a streamlined, flat organization that moved power out of headquarters and into the hands of commanders in the field.

- The Strategic Air Command (SAC) construct fit with the Cold War, but the inflexible, "checklist-following" nature of SAC and thus the Air Force, did not mesh with the dynamic conflicts in Iraq and the Balkans.

- What General McPeak and Air Force senior leaders did not consider was the distinct nature or needs of the nuclear mission. While the CSAF was correct that nuclear weapons are no longer central to the fight, deterrence—which includes nuclear weapons— remained a core Air Force mission.

- In 1986, Congress passed the Goldwater-Nichols Act to address the issue of service interoperability. The legislation forced the services to take meaningful steps to improve joint operational capability.

- Goldwater Nichols changed the services role in combat and non-combat operations. Under the new law the armed services became force providers to joint commanders. While this addressed the problem of inter-service rivalry, it changed the mission construct of the services.

Root Cause 3: Institutional Focus

- While the decline in nuclear competence occurred steadily, many red flags were raised, but ignored. Conscious decisions were made to alter training and education requirements to the point that most airmen did not receive any nuclear-related training. Policies were ignored or revised to meet new challenges, in the ever-flattening Air Force organization.

- There were numerous signals for the Air Force that the nuclear mission was failing. Even internal reports warned of diminished standards of nuclear weapons security.

- The Air Force allowed local changes to the once standardized practices that were consistent throughout SAC and other commands for nuclear-related activities. Officially, these were to be reviewed at command headquarters; but in practice few requests for change were sent to higher headquarters or sister units because neither the command staff nor the unit staff was held accountable for changes. This issue is highlighted in the Minot incident when the load crew failed to follow their checklist and perform the missile safe status check; however, the loading checklist no longer required the load crew to check the missile safe status. The step had been removed sometime during the past 10

years. There is no indication whether this change was shared with headquarters personnel.

- Both the CDI and Schlesinger Reports noted a dramatic change in Air Force nuclear education and training. The use of strategic bombers in conventional roles in conflicts in Kosovo and Iraq highlighted the ascendency of conventional forces and the declining relevance of the nuclear mission to the operational Air Force, reflecting changes not only on the platform and its mission, but also on training requirements.

Root Cause 4: Failure of Leadership

- The most prominent finding from this study was that of leadership failure.

- Air Force leadership waited to relieve anyone of command until after the 30 day CDI investigation. This is usually interpreted one of two ways: Air Force senior leaders waited for all the facts before making their decision, or senior leader demonstrated a lack of focus on the issue.

- Interviewees suggested the events and the ramifications of Air Force senior leader decisions throughout the years were cumulative in effect, building one upon another, forcing additional harmful decisions.

- In the SAC era, experience and expertise were developed through years of technical training, practice and documented on-the-job training under experienced supervision. However, General McPeak's flat organization method changed such a practice of strict compliance and clear guidance.

- There are some leaders with little, no, or dated nuclear experience who hold key positions in the United States Air Force nuclear enterprise, including supervisors and senior enlisted members as well as squadron, group and wing commanders.

- One study found that the lack of "visible leadership" at senior levels makes maintaining rigor and focus at all levels "to meet demanding proficiency standards" all but impossible.

- The merging of Air Force Specialty Codes and merging of major commands significantly reduced the Air Force's overall focus on nuclear force capability.

Root Cause 5: Failure to Focus on Expertise

- Structural changes affected the development of officer technical expertise in operations and logistics maintenance. Through reductions in the force, several officer career fields were merged, and leadership positions required "generalists" rather than "specialists."

Rather than train officers for what were becoming considered "niche" jobs such as nuclear munitions officer, career paths within combined AFSCs were designed to make officers able to perform adequately the wider set of jobs subsumed within these new "generalist" AFSCs.

- The message to nuclear-capable Airmen was both subtle and direct. There were numerous instances following the September 11th attacks when troops at nuclear bases were told directly by Air Force and joint commanders that they were in a sunset business that would not provide career enhancement and most importantly, that they were not contributing to the fight that mattered.

- There is an expectation; both by the individual and organization that every Airman should strive to reach the highest position of which he is capable. Air Force education and training requirements support the idea that all Airmen should strive to be leaders. The problem with this expectation is that it diminishes the value of, or even punishes those who choose to develop a depth of expertise by remaining in a single career, functional specialty (such as the nuclear enterprise) or location(s) (the nuclear enterprise is concentrated at just a few bases and largely precludes deployment "downrange").

- The manpower cuts that occurred across the Air Force had a dramatic impact on many career fields, especially those smaller pools that generally required higher levels of expertise.

- As one interviewee explained, "people from the highest ranks down were 'making the system work' instead of demanding that it be fixed.

- While it is an accepted fact that the Air Force nuclear knowledge and experience pool had been drained, nuclear career fields were not protected from personnel cuts through reductions in force or selective early retirement boards.

- The Air Force personnel assignment system is perceived to be based on fairness and equity or individual career needs rather than on assigning the most qualified officer to support mission requirements.

EXPANDED DISCUSSION

Minot Flight

As part of an Air Force re-positioning program, B-52 flights were scheduled to move 12 Advanced Cruise Missiles with nonnuclear warheads from the 5th Bomb Wing (BW) at Minot Air Force Base (AFB), ND to the 2 BW at Barksdale AFB, LA. This process is called "tactical ferry." In preparation for the move, the 5th Munitions Squadron personnel at Minot prepared two cruise missile pylons, with each pylon to be loaded with six supposedly nonnuclear warheads in the Minot weapons storage area. Prior to the planned shipment, the munitions control section changed the selection of cruise missiles to be ferried but failed to coordinate the change with the nuclear weapons maintenance shop responsible for preparing the missiles for the move. Standard preparation for the cruise missiles required removing nuclear warheads and installing nonnuclear warheads. There were two trailers of missiles containing two pylons each scheduled to be transferred but due to poor coordination, only one trailer of missiles had been prepared and placarded with the verbiage "Ready for Tac Ferry." The remaining trailer of missiles still had nuclear warheads that had not yet been replaced with nonnuclear warheads. At the time, limited storage capacity required co-mingling nuclear and nonnuclear warhead cruise missiles in the storage structures even though visually recognizing the difference between nuclear and nonnuclear requires close inspection. The only way to identify a nuclear from a nonnuclear payload in a cruise missile is to look through a small quarter-sized observation window to check for special markings. Intermingling of nuclear and nonnuclear weapons was prohibited until at least 1992. At the time of this incident, there was no written policy prohibiting intermingling of weapons and there was no record of when the policy had changed.

> ***"This was an unacceptable mistake and a clear deviation from our exacting standards. We hold ourselves accountable to the American people and want to ensure proper corrective action is taken."***
>
> *- Michael Wynne,*
> *Secretary of the Air Force*

The Minot munitions control section issued a work-order to move the trailer loaded with two pylons to the flightline and to load the missiles on the aircraft. However, the munitions crew used an incorrect pylon number and failed to accurately monitor and control the breakout and delivery of the missiles to the flightline. The delivery crew entered the storage structure but did not to perform the missile safe status check as required by technical orders to verify the missiles indeed had nonnuclear warheads. The crew drove the two trailers, one with nonnuclear warhead loaded missiles and, unknowingly, the other with nuclear warhead loaded missiles to the flightline where the B-52 aircraft crew chief signed for the load. The aircraft crew chief, unlike the weapons loaders, was not trained to work with nuclear weapons but local procedures called for the aircraft crew chief to sign for the weapons. At Barksdale, the procedure was to have a nuclear-knowledgeable load team chief sign for the load. The reason for having two separate

procedures for the same function at different bases is unclear. The Minot crew chief did not check the status of each missile, but there was no technical order requirement to do so as this mission was expected to be nonnuclear, thus having far less stringent requirements. The crew loaded the two pylons of missiles for the flight to Barksdale.

Air Force procedures dictate that the radar navigator on a B-52 is responsible to the aircraft commander for verifying there were no nuclear warheads on the missiles. However, the navigator on "Doom 99" failed to follow the checklist and only checked one missile and mistakenly assumed that all the missiles were nonnuclear.

"Doom 99" arrived at Barksdale and sat on the tarmac unguarded for nine hours before the aircraft maintenance squadron personnel unloaded the missiles. When the crew came to transport the missiles to the storage area, they correctly followed their checklist and looked through the small access window in each missile. They discovered the nuclear warheads on the missiles and immediately alerted leadership. While the weapons were secured on the flightline, the incident was reported up the Air Force chain of command.

Mistakes were made by numerous Minot personnel on August 31, 2007. Each assumed that since the task was mundane – moving Advanced Cruise Missiles with nonnuclear warheads from one base to another – and that no special effort was required. The *first mistake* was the simple oversight to label a trailer with weapons appropriately. This mistake, while clearly at the individual level, can be tied to the loosening of procedures regarding the storage of nuclear and nonnuclear weapons together. Thus, even at the first step, both an individual and the institution were at fault. The *second mistake* was the "scheduling error" where the munitions personnel did not coordinate with the maintenance shop to assure that the correct weapons were chosen for transfer. This too highlights both personal and institutional errors. Airmen at Minot did not use the published squadron maintenance schedule. The decision not to use the schedule was made in order to avoid complexity and to work around possible classification issues. In the end, however, Airmen at Minot ignored important details and failed to properly coordinate last minute changes. This resulted in oversimplification and reliance on a single inexperienced Airman to provide complex information via a PowerPoint slide. Several interviewees noted that "management via PowerPoint" has become commonplace throughout the Air Force.

The *third and fourth mistakes* occurred when the munitions personnel did not monitor the move nor did the tow crew follow the checklist and confirm that the weapons they were moving were indeed nonnuclear. The weapons were driven past a security checkpoint, but again since the weapons were presumed to be nonnuclear, no one checked them as they passed. The *fifth mistake* took place on the flightline when the plane's crew chief signed off on the weapons without confirming their status. The *sixth and final mistake* occurred when the navigator checked only one of the nonnuclear missiles and considered that spot check acceptable for all weapons loaded on the plane.

A Shipment to Taiwan

While the Air Force was reeling from the investigations of the Minot incident, it was revealed that Taiwan received sensitive components used on the Minuteman III intercontinental ballistic missile components rather than the helicopter batteries it had ordered from the U.S., bringing to light a second nuclear-related incident.

Twice a year, the Air Force supply system automatically conducts Air Force-wide adjustments to level supply inventory using a computer-based process called Readiness Based Leveling. In February 2005, the system identified a requirement for 11 forward sections of MK-12 reentry vehicles used on Minuteman III intercontinental ballistic missiles (ICBM) at F.E. Warren AFB, Wyoming. As there was only one at F.E. Warren, the supply system generated an automatic transaction to ship 10 units. When the shipment arrived via Federal Express special ground service in March 2005, the MK-12 forward sections were properly received and stored in segregated storage due to their controlled-item status.

Four days later, an inexperienced (three months on the job) Air Force Item Manager at the 526th ICBM Systems Group at Hill AFB, Utah determined that F.E. Warren had too many MK-12 forward sections and notified its base personnel to ship four of the forward sections to the Defense Logistics Agency (DLA) warehouse at Hill AFB. The F.E. Warren Traffic Management Office prepared the controlled items for shipment, placing the shipping documents inside the shipping container. These items, similar to classified material, are shipped with all documentation packed inside the container. Procedures require the recipient to open the container, review the shipping documents, verify the contents, sign a receipt and return that receipt to the shipper.

The F.E. Warren personnel did not properly mark the outside of the shipping container and shipped the hazardous, sensitive forward sections to Hill AFB. When the shipping container arrived at the warehouse, personnel did not open it, review its shipping documents, or return the receipt to F.E. Warren; nor was there follow-up on the missing return receipt at F.E. Warren as is required. They were delivered to the unclassified warehouse instead of the classified storage area. At some later time, DLA warehouse personnel attempted to scan the barcode on the unopened shipping container to identify the contents. When the scan failed (for no known reason) to produce a stock number, warehouse personnel simply used the hazard classification for the nomenclature and the number they arbitrarily selected was for a helicopter battery. They marked the unopened shipping container accordingly and shelved it in the warehouse.

In 2005, as part of the Foreign Military Sales Program, the government of Taiwan requested 135 helicopter batteries. In June 2006, the DLA warehouse at Hill AFB shipped the mismarked MK- 12 forward sections as helicopter batteries. The error was noted by the Taiwanese government in January 2007, but only after repeated requests by Taiwan did the U.S. government acknowledge the error (fourteen months later).

An investigation immediately ensued. It was determined that although the errors were made by a junior civilian item manager and government warehouse personnel, the major general in command of the Hill AFB Air Logistics Center, the colonel who was the ICBM system program office director, and the lieutenant general at Headquarters Air Force (HAF) Logistics, Installations and Mission Support (A4/7) were disciplined and/or retired. These actions stand in stark contrast to the Minot incident where no general officers were disciplined, although numerous personnel with the rank of enlisted through colonel were held accountable.

As in the Minot case, individual mistakes were compounded by institutional complacency and lackadaisical attitude toward the mission. The *first mistake* was the mismarking of the shipping container by personnel at F.E. Warren. The *second mistake* occurred upon arrival at the warehouse at Hill AFB where the container was never opened so that the paperwork could be examined and the contents effectively managed. The *third, related mistake* was that when the bar code on the outside of the package could not be properly identified, staff simply made up a determination as to its contents rather than opening the container to confirm the contents. The *fourth mistake* was that personnel at F.E. Warren who had shipped the missile parts did not follow up when no return receipt was received. The *fifth and final mistake* was that the error was confirmed only after numerous efforts by the Taiwanese government to rectify the situation.

The Response: Investigations

> ***"The Air Force is currently investigating an error made last Thursday in the transfer of munitions … from Minot Air Force Base to Barksdale Air Force Base aboard a B-52 Stratofortress…"***
>
> *– Pentagon Press Briefing*

Initially Air Force senior leaders believed there would be no public interest in the incidents. This fact indicates the decline in understanding and acceptance of the nuclear mission by Air Force leadership. As the Washington Post summarized:

> The Air Force decided at first to keep the mishap under wraps, in part because of policies that prohibit the confirmation of any details about the storage or movement of nuclear weapons. No public acknowledgment was made until service members leaked the story to the Military Times, which published a brief account Sept. 5. Officials familiar with the Bent Spear report say Air Force officials apparently did not anticipate that the episode would cause public concern. One passage in the report contains these four words: 'No press interest anticipated.'[1]

With hindsight, it is difficult to imagine why Air Force leadership would assume there would be no interest in a flight during which, according the Air Force Chief of Staff (CSAF), "at

[1] Joby Warrick and Walter Pincus, "Missteps in the Bunker," *The Washington Post*, September 23, 2007.

no time was the public in danger."[2] However, this was not the first nuclear weapon related incident for the Air Force.[3] There had been other mishaps, both in the Air Force and the Navy, for which little attention was paid. Some received minor local press coverage and an occasional inquiry by the representative from the congressional district. In 2003, commanders at the Navy's Strategic Weapons Facility, Pacific at Bangor, Washington, were fired after a ladder was left in a Trident missile tube. The local paper carried a story and the respective congressional office was briefed on the incident and Navy remediation.

In August 2009, the Navy fired the commander at the same base because his superiors had "lost confidence is his ability to lead." Unlike the Air Force, the Navy has maintained steadfast willingness to hold its nuclear sailors accountable. However, within the Air Force, the limited talent pool sometimes determines the outcome of the incident investigations.[4]

> ***"…lack of attention to detail, a lack of effective leadership and supervision"***
>
> *-Pentagon Press Briefing, describing the findings of the Minot investigation*

Air Force senior leaders clearly believed that Minot was a onetime event of little consequence. The immediate investigations reaffirmed the U.S. Air Force (USAF) position that there was no institutional problem but rather localized issues at the Minot and Barksdale bases. The events surrounding the mis-shipment of classified materials to Taiwan were considered basic logistics errors. As a result of the Minot and Taiwan incidents, six separate investigations or reviews were conducted:[5]

1. Air Combatant Command, *Commander Directed Report of Investigation,* September 2007

General Ronald Keys, Air Combat Command (ACC) commander, tasked Major General Douglas Raaberg to lead an investigation of the Minot incident to determine how events transpired and to identify personnel who should be held accountable. The investigation began on August 31, 2007 and was completed by the end of September 2007.

2. Headquarters U.S. Air Force, *Air Force Blue Ribbon Review Of Nuclear Weapons Policies and Procedures,* February 2008

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[2] *Ibid.*

[3] A book published in early 2011, *15 Minutes: General Curtis LeMay and the Countdown to Nuclear Annihilation* [New York, NY: St. Martin's Press, 2011] details numerous accidents early in the U.S. nuclear program. The book relies heavily on recently declassified information. A recently declassified example can be found at http://www.gwu.edu/~nsarchiv/nsa/NC/nh4_1.gif which details a B-47 crash into a missile storage area in 1956 at RAF Lakenheath, UK.

[4] Following the Minot and Taiwan incidents two of the general officers who were reprimanded were kept in essential nuclear leadership positions because of their knowledge and experience. Walter Pincus, "4 Colonels Lose their Air Force Commands," The Washington Post, October 20, 2007, Warrick and Pincus, "Missteps in the Bunker," *op cit*, and Michael Hoffman, "Minot Nuke Handlers Still Not Ready for Inspection," *Military Times*, January 14, 2008.

[5] For more detail on the investigations see Appendix 2.

On 9 October 2007, the CSAF appointed Major General Polly Peyer to chair an Air Force Blue Ribbon Review (BRR) of nuclear weapons policies and procedures. The CSAF tasked the team to take an enterprise-wide look at Air Force nuclear responsibilities. Specifically, the CSAF highlighted a need to examine organizational structure, command authorities and responsibilities, personnel and assignment policies, and education and training associated with the operation, maintenance, storage, handling, transportation, and security of Air Force nuclear weapons systems.

3. The Defense Science Task Board Permanent Task Force on Nuclear Weapons Surety, *Report on the Unauthorized Movement of Nuclear Weapons,* April 2008

The Secretary of Defense commissioned General Larry D. Welch, retired Air Force Chief of Staff, to lead a team of senior officials to conduct an independent and objective review of nuclear surety practices. The task force re-examined the circumstances and systematic causes of the unauthorized movement of nuclear weapons from Minot.

4. Admiral Kirtland Donald, *Investigation into Shipment of, Sensitive Missile Components to Taiwan,* May 2008

Secretary of Defense Robert Gates expressed his lack of confidence in the Air Force's ability to self-assess these nuclear weapons related problems. As a result, he appointed Admiral Kirtland Donald, Director of Navy Nuclear Power and Nuclear Reactors to lead a new investigation.

5. Secretary of Defense Task Force on DoD Nuclear Weapons Management, *Phase I: The Air Force's Nuclear Mission (Schlesinger Commission Report),* September 2008 and *Phase II: Review of the DoD Nuclear Mission,* December 2008

After the Defense Science Board and Admiral Donald reports, Secretary Gates asked Dr. James Schlesinger, former Secretary of Defense and Energy to provide an independent review of Department of Defense (DoD) organizational, procedural and policy improvements necessary for the stewardship and operation of nuclear weapons. The review was conducted in two parts: the first part focused on the Air Force nuclear mission; the second reviewed the nuclear mission in DoD as a whole.

6. Headquarters U.S. Air Force, *Reinvigorating the Air Force Nuclear Enterprise,* October 2008

In the summer of 2008, shortly after the ACC Commander Directed Investigation (CDI), BRR and Admiral Donald reports were completed, the Secretary of the Air Force (SECAF) and CSAF directed the establishment of a 90-day Air Force Nuclear Task Force to "develop a strategic roadmap to rebuild and restore capabilities and confidence in our stewardship of the Air

Force nuclear enterprise." The resulting strategic plan synthesized recommendations from internal and external investigations that occurred following the two nuclear-related events.[bgk1]

Assessment of the Investigations and Reports

Although the investigations generated numerous recommendations, dismissals and reorganizations, most of this study's workshop participants and interviewees remained skeptical of the investigative process and the results. Many of those interviewed had much to say about the conduct and results of the investigations. The most significant objection was that they did not explore how and why the incidents occurred.

One interviewee suggested that the Defense Science Board report was the clearest in pointing the Air Force in the proper direction. Others suggested the Blue Ribbon Review did the opposite, providing a superficial checklist-focused assessment that stated the Air Force was doing the job correctly but could use some improvement in certain areas. The BRR claimed that only minor issues existed, but the Air Force nuclear enterprise was sound. Not a single interviewee had a positive word for the BRR. The kindest words were that it was not a "courageous document" and that it represented a "failed opportunity" for the Air Force to address issues it had known to exist for some time.

Many of those interviewed had participated in the different reviews and found that the primary motivation within the Air Force was to finish the reviews as quickly as possible, with as little further embarrassment as possible and move on. This mood was palpable and noted among study and review team members, as well as investigators. The two internal Air Force reviews were given only 30 days to complete their tasks. Participants suggested that the organizational climate was so tense immediately after the Minot incident that no one dared question findings or oppose the suggested "improvements" – even those within Air Force senior leadership. Interviewees shared their concerns that the investigations' findings were never validated. The Air Force task force had 90 days to produce the nuclear roadmap from the recommendations of the other studies. Staff officers quickly discovered there was to be no questioning the sometimes conflicting findings; rather they were told, "Just do it." There was a conspicuous sense of urgency to be seen making significant changes in organization, personnel and policy, and it was made clear that funding was readily available.

None of the investigations examined the management functions of the munitions and missile maintenance officer career field (21M); nor did they specifically address what actions or inactions constituted "a failure of leadership." The ACC Commander Directed Investigation, Defense Service Board, and Air Force Blue Ribbon Review study teams indicated that the Minot Air Force Base 5th Munitions Maintenance Squadron commander and the maintenance operations officer were *disengaged* from the squadron's nuclear weapons maintenance management. Such lack of involvement could have been a result of these officers viewing their roles as "leadership" exclusive of actually managing nuclear weapons maintenance and being

able to recognize poor NCO performance before that poor performance resulted in major organizational failure.

The investigations did not define nuclear expertise in operational terms. There is considerable literature to suggest that career broadening and the whole-person, general manager concept reduces the depth of expertise.[6] However, the Blue Ribbon Review recommended expanding career broadening as a corrective action even though there was no supporting evidence to conclude that this would help. Admiral Donald explained that only about half of the 22 senior leaders involved had the technical background and experience for the positions they held and that these leaders were seldom present where the nuclear weapons work was being completed in the weapons system areas, depots, or missile sites.

Such findings highlight the fundamental issue of the generalist versus expert question. Officers may believe their role to be that of the titular organization head and assume that all the information they need to manage the organization will be provided by subordinates. If so, they must be sufficiently knowledgeable and technically competent to recognize whether the information they are provided is correct. Alternatively, officers may believe that their role requires active management of their organization. This active officer role would require sufficient functional competence to differentiate between good and poor organizational performance.

A final definitive comment came from a member of one of the outside reviews. The interviewee suggested that it was clear to the investigators that the Air Force as a service no longer valued its nuclear role and mission. Nuclear capable wings were undermanned, overtasked and complained about having to conduct the nuclear mission in a time when conventional war was so prevalent and vital to the nation's security.

[6] Drucker, 2002.

THE HEART OF THE MATTER

While the events of 2006-2007 are significant in and of themselves, the Minot and Taiwan incidents are merely symptoms of greater institutional problems. The Air Force nuclear enterprise was in a state of decline and has been for the last two decades. With the standup of Air Force Global Strike Command (AFGSC) and A10, the Air Force is working to reestablish the enterprise on positive footing. It is clear from our interviews and research that the leadership has a long and challenging path ahead of them and some significant adjustment in the current course needs to be considered.

In 1986, events and senior Air Force leader decisions began shaping the contextual setting for the Minot and Taiwan incidents. There was a consensus among those with whom we spoke on the cumulative detrimental effect of various events and decisions, building one upon another, forcing other decisions that were only relevant because of the decisions made previously. Participants believed the cumulative effects were well known throughout the service and that a major incident was not unanticipated. Many interviewees wondered openly why no one in senior leadership had opposed the continuous onslaught of personnel reductions, reorganizations, and concurrent addition of new missions, tasks, and deployments. Comments from the most senior flag rank officers suggested the Air Force had immediately launched into major corrective actions before they understood the underlying problems or how to address them. Those same officers stated they did not believe there had been rigorous root cause analysis because the most significant corrective actions did not address the most clearly documented failures.

All of the issues added to the complex contextual background in which the Minot and Taiwan incidents occurred. The lack of a clearly articulated national nuclear strategy and policy allowed the Air Force to neglect the nuclear mission in order to focus on the urgent counterterrorism and conventional warfare requirements without oversight or criticism. With little legislative or executive branch interest in nuclear forces, Air Force senior leadership followed in the same path until they were forced to accept responsibility for the events. If one or two of the external factors had not existed, their absence would likely have not prevented either of the Minot or Taiwan incidents. However, these conditions had a corrosive effect on the nuclear culture of strict compliance that was so fundamental to daily activity during the Cold War. The effects were factors at all three levels of organization: tactical, operational, and strategic.

Through the workshops, interviews, and research, the following factors were identified as the most significant underlying areas, or “root causes” that set the stage for the two incidents:

1. Policy and oversight changes
2. Organizational and operational evolution

3. Institutional focus
4. Leader accountability
5. Failure to maintain and foster expertise

One anecdote highlights the problems of the Air Force nuclear enterprise prior to the Minot and Taiwan incidents: in the spring of 2007 the 5th Bomb Wing at Minot AFB had identified the possibility that a nuclear warhead could be mistaken for a nonnuclear one. Staff present at the meeting dismissed the issue outright saying there were too many safeguards in place for that to ever occur. That was true in the days of a "compliance culture" before Strategic Air Command (SAC) was disbanded in 1992. Since that time, the world has changed and along with it Air Force policy, procedures and attitudes. What has not happened was a marrying of political, economic, and cultural realties of the present with the unchanged requirements demanded by nuclear weapons.

Following the Minot and Taiwan incidents there were hearings before the Senate and House Armed Services Committees. During the Senate hearing Lieutenant General Daniel Darnell, Deputy Chief of Staff, HAF Plans and Operations, was asked to explain why the events had occurred. According to General Darnell:

> The root causes identified for the specific incident were *unit-level leadership and discipline breakdown at Barksdale AFB and Minot AFB*. These breakdowns were due to leadership failures and a declining focus on the strategic nuclear bomber mission. Over time, the breakdown of leadership and discipline *among a small group of Airmen at Barksdale AFB and Minot AFB* fostered an environment which eroded the strict adherence to established procedures.[7]

Through our research we have found the problems to be far more systemic than the Air Force leadership admitted in 2008. The problems were at all levels of the Air Force and institutionalized through years of change at the strategic, operational and tactical levels. The post-incident investigations identified two major causes of Minot and Taiwan incidents:

1. A lack of senior Air Force leadership focus on the nuclear mission as a result of the end of the Cold War and intense demand for conventional mission capabilities over the course of over 20 years of consistent deployments.
2. The Air Force had not effectively addressed the previously identified and continuing decline in nuclear weapons expertise.

[7] U.S. Senate Committee on Armed Services, Hearing on Air Force Nuclear Security, [transcript], February 12, 2008, p. 8.

From our research, we see the problem in three areas: leadership, management, and expertise. Each of these elements is critical to the other and without improvement in all three the nuclear mission will likely fail again.

Leadership

One of the inherent issues in any complex problem is how to define it. How well a problem is defined determines how well it will be solved. This report along with those that preceded it state that the Air Force had a failure in leadership, but we have not adequately defined what that means. The fundamental issue is that there is a difference between leadership and management. One definition of leadership is the process of social influence to obtain the cooperation of other people in the attainment of a goal."[8] Leadership requires a vision to inspire a team and having the credibility to back it up. It is effective leadership and team building, together with excellent management that forms a solid organizational culture.

The Schlesinger Commission noted that there was a failure of leadership at the national level to inform the Air Force of the continuing importance of nuclear weapons in U.S. national security. The report concluded that there was also a failure of leadership at the highest levels of the Air Force and at the component level to do the same. This failure will be discussed in detail in later chapters, but the lack of leadership direction created a void in Air Force strategic culture that will require significant attention and time to fill.

During his tenure as SAC Commander, General Curtis E. LeMay had a distinct leadership style based on principles that became the bedrock of SAC, and as CSAF, he instilled these principles across the whole Air Force. His leadership tenants persisted until there was a generational shift from bomber generals in primary Air Force leadership positions to fighter pilots – a move that began in the 1960s with the Vietnam War. When fighter pilots took the helm, they instilled their culture on the Air Force, resulting in massive changes. For those in the nuclear enterprise, the change was detrimental to their culture and institutions, especially as the Cold War ended and the articulated relevance of nuclear weapons was declining. Those who understood the nuclear value to national security were fading into the background.

The institutional change from the bomber to the fighter culture was fundamental to the ability of the Air Force leadership to continue to espouse the concept that the nuclear mission remained a core mission of the service. The result was a generation of Airmen without inspirational leadership that could motivate an organization to believe in the deterrent value of the nuclear forces.

[8] Martin Chemers and Roya Ayman, ed., *Leadership Theory and Research: Perspectives and Directions*, p. 295..

Management

Management includes planning, organizing, staffing, leading or directing, and controlling an organization. Much of what was described as a lack of leadership by previous studies we have grouped under management. The wings may have been badly led, and thus uninspired; however, poor management is the cause of the lost of institutional focus on nuclear weapons. This loss of focus – even within the nuclear community -- was often demonstrated by personnel who did not follow or understand the need to follow regulations or technical orders. Units were allowed to create their own procedures and processes; which meant that not only were operations locally specialized, but those transferring between bases were likely to have a significant learning curve to accomplish the same mission.

Confusion as to what background or preparation officers need to lead and manage nuclear weapons organizations has long been a controversial issue and workshop participants expressed strong opinions on this topic. The CDI report, the BRR, and Admiral Donald's report determined that the Air Force had "leaders with little, no or dated nuclear experience who held key positions in the Air Force nuclear enterprise, including supervisors and enlisted members as well as squadron, group and wing commanders."[9] The CDI observed that the munitions maintenance squadron commander and operations officer were disengaged from day-to-day weapons storage area work and were "focused up the chain of command" instead of down on the squadron's mission work.

Effective leadership and management remain critical in repairing the cultural issues as well as the operational ones. In addition to the issues of leadership and management is one that goes to the very heart of the decline of the nuclear enterprise: expertise.

Expertise

Just as leadership and management required definitions so does expertise. The Air Force had tried to lump significantly different specializations into a single unit labeled as "nuclear expertise;" however, through our research we found that the best operational definition of expertise is *technical competence*. This term includes knowing your craft so well that you can pass it to others –to sustain or even grow the knowledge base. "Expertise" therefore, requires experience. In the Air Force that means time in a specific job. Many interviewees felt that the Air Force had lost the focus on technical competence in favor of career progression. There are several reasons for this that we will address in the following chapters.

[9] Schlesinger, James R. Report of the Task Force on DoD Nuclear Weapons Management, Phase I: The Air Force's Nuclear Mission. Arlington, VA: Secretary of Defense, September 2008, p. 22, Air Combatant Command (ACC) Commander Directed Investigation (CDI), September 2007, p. 44, US Air Force Blue Ribbon Review Nuclear Weapons Policies and Procedures, February 12, 2008, App. H.

One of the key reasons for the loss of expertise was the Air Force decision to compensate for decreased total manpower by "generalizing" the officer corps. Rather than train officers for niche jobs such as nuclear munitions officer, career paths were designed to make officers able to perform adequately in a wider set of jobs. Many of the underlying problems that led to the incidents were management responsibilities of the munitions officer career field.

The logical foundation for this strategy is that of the "whole-person" concept that officers who are identified as "good leaders" can succeed in any leadership position. This strategy has been largely discredited based on both scholarly research and repeated failures of the whole-person concept in practical application.[10] From 1986 through 2007, the gradual effect of the whole-person officer model of professional development and assignments was to align the entire wing's senior leadership with officers who were good leaders, but not expert enough in nuclear weapons functions to recognize continual substandard performance before the wing underwent what could have been catastrophic failure.

The decision to adopt the whole-person officer model was based on the need to compensate for reduced manpower availability. Since less than one percent of the officer corps are generals, it is logical these officers would be generalists and possess skills and knowledge required to perform successfully in positions of high command over a broad spectrum of functional specialties. However, their success and the success of the entire Air Force depend on marshalling the efforts of the most expert officers available in every key specialty under their command. As Peter Drucker, renowned management expert, explained, "The idea that there are well-rounded people, people who have only strengths and no weaknesses (whether the term used is the *whole-person* or the *generalist)* is a prescription for mediocrity if not incompetence."[11]

Would the Minot and Taiwan incidents have occurred if the Air Force had not altered the existing officer leader/manager model? There is no absolute answer to this question. However, according to Air Force munitions officers we interviewed, if the 5th Munitions Squadron commander, operations officer, and squadron officers had been deeply expert in munitions and missile maintenance, it is unlikely they would have allowed nuclear and nonnuclear cruise missiles to be co-mingled in storage. They would not have allowed an inexperienced airman to be the only squadron member relaying the formal maintenance schedule. It is unlikely they would have allowed the

> ***"Individuals in leadership positions lacked the technical and professional experience necessary to effectively analyze problems and develop solutions."*** *2008 Adm. Donald Report*

[10] See John J. Gabarro, *The Dynamics of Taking Charge,* [Boston, MA: Harvard Business School Press, 1987] and "When a New Manager Takes Charge," *Harvard Business Review*, 85(1), 104-117, Diane Vaughn, *The Challenger Launch Decision: Risky Technology, Culture, and Deviance at NASA*, [Chicago, IL: The University of Chicago Press, 1996], Admiral Kirkland Donald, *Report of the Investigation Into The Facts And Circumstances Surrounding The Accountability For, And Shipment Of, Sensitive Missile Components To Taiwan,* (Report N00N/08-0051), Washington DC: Department of the Navy, 2008.

[11] Peter F. Drucker, *Managing in the Next Society*, [New York, NY: Truman Talley Books], 2002, p. 72.

daily, weekly, and monthly scheduling meetings to be conducted as a "loose confederation of shop non-commissioned officers who never used the formal schedule during planning meetings" as described in the CDI.[12] It is also unlikely they would have allowed munitions control to be manned by non-commissioned officers (NCO) who had never even been inside the facility and who were not knowledgeable of the munitions operations they were supposed to be controlling.

If one or two people make a serious mistake, it may be written up as personal error, but when an entire organization fails there must be more fundamental systemic causes in organization, training, equipment, management, and leadership. If the real problem is supervision, management or leadership, then Air Force policy for the development of these skills must be examined.

An important conclusion is that officers and senior NCOs at the unit level must be expected to become *technically competent*. All officers cannot be generalists and some have to be responsible for managing technical functions. These officers managing and leading munitions and nuclear weapons technicians, weapons loaders, at the section, flight, and squadron levels must be sufficiently expert to ensure the safety, security and reliability of these technical operations and, if necessary, to intervene effectively to prevent organization or mission failure.

Lack of expertise and specifically a depth of the knowledge base is one of the biggest considerations for repairing the nuclear enterprise. This dearth flows upward and affects the ability of managers and leaders to effectively lead and manage an organization whose processes and procedures are unfamiliar to them.

The Air Force failed in all three aspects, leadership, management, and expertise in the newly termed "nuclear enterprise." While the service has spent significant time and resources to address reorganization, and thus, management, all three issues still remain inadequately addressed.

Comparing Air Force and Navy Nuclear Operations

In assessing the welfare of the Air Force nuclear enterprise, it is instructive to look at two of the most influential leaders of the Navy and Air Force nuclear programs. General LeMay's name is virtually synonymous with SAC. The same can be said of the "father of the nuclear navy" Admiral Hyman G. Rickover. Both men had similar personalities: smart, decisive and determined. They understood the vital nature of their respective nuclear missions and were able to institutionalize safety and security standards. Both maintained ultimate control over personnel and made it their responsibility to grow expertise. General LeMay was known for spot promotions while Rickover's detailed interviews for the nuclear Navy are legendary.

[12] CDI, p. 15.

General LeMay was the definitive combat operator. "He knew his profession literally from the ground up, and he seldom if ever allowed his ego to interfere with the results.[13] He continually educated himself on every minute detail of his organization and every tool at SAC's disposal. He demanded nothing less that perfection from his staff. "[T]o ensure nothing ever went wrong, SAC wrote manuals for every job, demanded strict adherence to checklists, and drilled aircrews in a rugged routine of training and alerts that created a body of 'perfect specialists' who were consumed with executing their mission flawlessly…"[14]

Admiral Rickover had similar personal qualities. Rickover was the consummate professional and did not accept "stupidity." He had congressionally mandated authority over the navy's nuclear capabilities which gave him the ability to remove a submarine or warship from active service –a power he did not hesitate to use.[15] Rickover created his own job and in 1949, he "made a deal" with the Navy and the Atomic Energy Commission to create a new division for naval reactor development, placing him at the helm of both the technical and military sides of the equation.[16] From that point on in his 63-year naval career, he commanded the U.S. Naval nuclear program. By 1984, one out of every four admirals commanding ships had been trained by Rickover.[17] His influence on the Navy's nuclear program was at least the equivalent of General LeMay's on the Air Force. General LeMay held command of SAC from 1948-1957, the longest any officer presided over an Air Force command in the 20th century.[18]

> ***"I have little tolerance for mediocrity, none for stupidity."***
>
> *- Adm. Hyman G. Rickover*

Admiral Rickover developed the underlying principles in naval nuclear propulsion organization in the early 1950s. Rickover managed the development and operation of the first nuclear powered submarine, the Nautilus.[19] Admiral Rickover's focus was on preventing a nuclear reactor accident, and this singular focus pervaded the nuclear Navy organizational culture during his 33-year tenure as the head of naval nuclear programs. He was aboard almost every nuclear submarine as it was being completed, placing his personal stamp of approval on the ship. Rickover instituted a safety program founded on officer experience, expertise and human redundancy.[20] There were, and are today, extremely demanding officer selection standards for the nuclear propulsion program. While he led the nuclear propulsion command he

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[13] *Ibid*., p. 178.
[14] *Ibid*., p. 61.
[15] December 1964 60 Minutes Interview, accessed at www.people.vcu.edu/~rsleeth/Rickover.html.
[16] See: "Science: The Man in Tempo 3," *Time*, January 11, 1954, http://www.time.com/time/magazine/article/0,9171,819338,00.html#ixzz1FVlKasee
[17] December 1964 60 Minutes Interview, *op cit.*
[18] Air Force Magazine, October 2008.
[19] For a detailed account see Clay Blair Jr., *The Atomic Submarine and Admiral Rickover* [New York, NY: Holt, 1954].
[20] P. Bierly, and J.C. Spender. "Culture and High-Reliability Organization: The Case of the Nuclear Submarine." Journal of Management 21(4), (1995): 639-656.

personally interviewed and selected every candidate.[21] The nuclear propulsion organization is responsible for managing high-risk, complex, technical, and highly interdependent processes. The Navy's nuclear propulsion organization has retained Rickover's stringent standards and today remains error-intolerant and operates virtually accident and incident-free.[22]

Given that General LeMay and Admiral Rickover had so much in common, why was the Navy able to institutionalize Admiral Rickover's standards long-term, while the Air Force allowed General LeMay's SAC standards to decline? Both men were equally reviled by some in their respective services, and yet Admiral Rickover's standards remain the hallmark of the Navy nuclear program.[23] One of the fundamental differences between Navy and Air Force is that the nuclear mission was never a core mission for the navy; however, it was a core capability. Propulsion ensured that the nuclear mission would remain stable because it played an inherent role in naval capabilities.

> ***"I don't have time to distinguish between the unfortunate and the incompetent, the end result is always the same."***
>
> *- Gen. Curtis E. LeMay*

According to interviewees, the perception is that the Navy is not perfect but it maintains high standards with less generous budgets. The naval nuclear enterprise was deemed fundamentally sound partially due to the fact that the Navy's strategic stewardship model stayed distinct. The Air Force made conscious choice to de-emphasize the nuclear mission, reduce manpower and cut budgets.[24]

The Demise of the Soviet Union and SAC

The collapse of the Soviet Union changed the primary national security dynamic around which the U.S. Armed Services, especially the Air Force, had been structured since World War II. Throughout most of the Cold War the Warsaw Pact outnumbered NATO conventional forces in Europe. The West countered the Soviet conventional superiority with strategic nuclear weapons provided by SAC and tactical nuclear weapons deployed in NATO countries. After the collapse of the Soviet Union and establishment of more friendly relations with Russia, the United States had less of a rationale to maintain the large number of deployed weapons. There was tremendous public pressure for a peace dividend. The U.S. military forces and their costs had to be reduced. In June 1989, the Chairman of the Joint Chiefs of Staff General Colin Powell unveiled "The Base Force" concept. The Base Force required a 20 percent reduction in

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[21] Some of the most telling Rickover anecdotes come from his selection process. See http://bubbleheads.blogspot.com/2009/02/rickover-stories-needed.html

[22] Statement of Admiral F. L. "Skip" Bowman, U.S. Navy Director, Naval Nuclear Propulsion Program before the House Committee on Science, 29 October 2003, Accessed February 28, 2011. http://www.navy.mil/navydata/testimony/safety/bowman031029.txt

[23] Rickover truly hated by many of his fellow officers and was twice passed over for Admiral and only received it after congressional and presidential intervention."Unsinkable Hyman Rickover," *Time*, May 23, 1977, http://www.time.com/time/magazine/article/0,9171,911955,00.html?iid=chix-sphere.

[24] Schlesinger I, *op cit*, p. 26

personnel, a 25 percent reduction of force structure and a 10 percent budget reduction. In the midst of these rapidly changing world and domestic events, Iraq invaded Kuwait on August 2, 1990.

Although the SAC had dominated the Air Force for most of its 46-year tenure from 1946-1992, SAC was inactivated a year after the dissolution of the Soviet Union. SAC was the initial raison d'être for an independent air force and that fact drove the early culture and organization of the service. When political realities changed, SAC lost its dominance in Air Force hierarchy. Dominance, however, was a large part of its identity and thus, the identity of the service. With the absence of a nuclear foe, the mission of the Air Force changed from preventing war through deterrence to fighting and winning the nation's wars.[25] SAC's responsibilities and assets were divided between ACC (missiles and bombers), Air Mobility Command (tankers) and U.S. Strategic Command (a unified command which replaced SAC which had been a specified command). The ICBM mission would transfer from ACC to Air Force Space Command a few years later.

Air Force Cultures of Compliance and Self-Assessment Are Gone

Post-SAC, the Air Force allowed local changes to the once standardized practices that were consistent throughout SAC and other commands for nuclear-related activities. Officially, these were to be reviewed at command headquarters (ACC for the nuclear bomber units); but, according to study participants, in practice few requests for change were sent to higher headquarters or sister units, because neither the command staff nor the unit staff was held accountable for changes. Local deviations became normal and were even encouraged through the Air Force Smart Operations 21 (AFSO 21) initiatives designed to spur best practices. For example, the decision to intermingle nuclear and nonnuclear weapons in the weapons storage structure at Minot AFB was a local procedure adopted because storage space was limited. This policy was not challenged by the headquarters staff, although according to interviewees, senior leaders were aware the change had been made.

Several interviewees told us that the Minot load crew failed to follow their checklist and perform the missile safe status check; however, others clarified that the loading checklist did not have a step requiring the load crew to check the missile safe status and that the step had been removed sometime during the past 10 years. There is no indication whether this change was shared with headquarters personnel.

In answer to the question of how the Minot incident could have happened, one interviewee explained that NCOs did not follow technical data and the organizational culture that

[25] See Secretary of Defense, Report of the Commission on Roles and Missions of the Armed Forces, [Washington, DC: Department of Defense, 1995], www.dod.gov/pubs/foi/reading_room/734.pdf. Also CSAF McPeak repeatedly used the "fly, fight, and win" terminology in his speeches. See *Selected Works of the CSAF Merrill McPeak, 1990-94*, [Maxwell AFB, AL: Air University Press, 1994] pp. 66, 261, 270 & 273.

allowed the mistakes was "a very loosely managed operation" and had been for years. Another described his amazement that when he assumed command of a nuclear unit prior to the Minot incident there were no checklists (e.g. storage structure door opening checklists, towing checklist, munitions control checklists, etc.). Procedures and processes were not written; or if they were written they were outdated or inadequate. Therefore, people had become accustomed to not using them.

Yet another former commander at a nuclear wing detailed his efforts to change the noncompliance culture. He shared his frustration that even after he had worked at changing the culture for two years many of the NCOs "did not get it." One story was particularly telling; a maintenance team sergeant found a "ding" in a nuclear weapon during a maintenance inspection and rightly began to prepare an unsatisfactory report. His supervisor told him there was no need to submit a report because it was clear that this was "not a serious problem and you don't have to report every little thing." The reason this anecdote resonated with our team was that the incident occurred at Minot in 2010, two years after the unauthorized weapons movement. Incidentally, the sergeant did not accept his supervisor's direction and went around him to the next person in command, who agreed that an unsatisfactory report should be submitted.

These stories show the depth of the problem facing the Air Force in addressing its organizational culture. However, our interviewees cautioned that simply stating the Air Force should have a "culture of compliance" will have little effect on personnel performance of daily requirements. All jobs are not equal; nuclear tasks require exact compliance. Though none of the participants suggested a return to SAC, they acknowledged SAC's discipline and culture of strict compliance and agreed that the concerted effort by the tactical operators to kill the SAC culture hurt the Air Force's ability to properly sustain the nuclear enterprise.

Interviewees confirmed that the Air Force had little tolerance for bad news. Commanders did not encourage reporting failures; no matter how small or insignificant. Examples from our interviews included a case where self-reported missile crew sleeping was punished; in contrast to the intent of the self-reporting system that is geared toward identifying warning signs in time to devise a process, and procedure to prevent problems, such as crews not getting enough sleep before an alert shift. Another example was the punishment of crews who reported lost tools. The effect was the discouraging of reporting an incident. Interviewees stated they experienced many instances of commanders trying to demand compliance but without understanding of the intent of self-reporting programs, and the negative consequences of punishing an honest admission.

Another interviewee explained that a lack of compliance and self-reporting has led to a culture of complacency – people *chose not to learn* or execute the things they know are vital to the mission. Why? Because they do not comprehend the ramifications of failure of the nuclear mission; "deterrence" has become only a theory and not a mission in the eyes of many Airmen.

Nuclear Education and Training De-emphasized

Both the CDI and Schlesinger Reports noted a dramatic change in Air Force nuclear education and training.[26] The use of strategic bombers in conventional roles in conflicts in Kosovo and Iraq highlighted the ascendency of conventional forces and the declining relevance of the nuclear mission to the operational Air Force. This was reflected in changes not only to the platforms and their mission, but also in training requirements. Conventional missions utilizing, for example, precision guided munitions, required additional training and acumen. However, with funding restrictions and the need to prepare for a diversity of missions, the Air Force reduced training hours allocated to the nuclear missions in order to increase hours for pressing conventional missions.

A few decades ago, many young captains and majors who were to become general officers were either attending or instructing at the USAF Weapons School at Nellis AFB, Nevada where nuclear operations and weaponeering were a significant part of the coursework. However, nuclear curriculum at the USAF Weapons School had been removed, a change that required four-star approval. Steven Covey's "The Law of the Farm" says you reap what you sow: it is noteworthy that the instructor pilot who flew the "Doom 99" mission from Minot to Barksdale did not receive any nuclear training during her USAF Weapons School training.[27]

If the Air Force is increasingly focused on preparing generalists with broad range of experiences, the price to be paid is a corresponding loss of experiential depth within a given field. There is significant anecdotal evidence of this detriment to the nuclear mission. Between 1999 and 2001, seventy to eighty percent of officers in the crew force at F.E. Warren were on their first "nuclear" assignment; by 2007 that number had risen to 98 percent. In 2008, eighty percent of Minot security forces were in their first assignment. As requirements rose for overseas deployments, security forces were undermanned at nuclear posts. In at least one instance, a lieutenant general approved a memo declaring ICBM security forces need only be manned at the sixty percent level, given the strain of expeditionary requirements.

Just as previous investigations found, the study team came to the conclusion that choices were made by senior Air Force and other national security officials that dramatically altered the state of the Air Force nuclear enterprise. At times the signs were clear that expertise and culture had declined to the point that the enterprise was in danger of catastrophic failure. But even among the most senior level officers we interviewed, none had openly raised the alarm to their superiors. Most officers said they "just made do" with the circumstances.

[26] CDI, p. 44, Schlesinger, p. 44-45.
[27] CDI, p. 44. Although the instructor pilot did not receive any nuclear training at the USAF Weapons School, she had received training periodically throughout her B-52 qualification and upgrade training. Nuclear training has been added back into the USAF Weapons School curriculum.

Interviewees suggested there had been a marked change in how senior officers are leading their operations. Too many senior leaders appear to have little background, knowledge or preparation for the organizations they manage and lead, as reported in the investigations. The requirement for joint assignments in order to make flag officer rank, while broadening senior leaders' experience, further decreases their expertise. The perception exists that senior officers stay too busy to make informed decisions. This issue seemed related to the manpower, continual deployments and mission growth that perhaps drive senior leaders to depend on short bursts of condensed and highly filtered information, leading them to make poor decisions.

RECOMMENDATIONS

As one retired general officer interviewed stated, "It's not a complicated story; the issue is how to restore the culture of accountability for everything that has to happen for your mission to succeed." If this is true, the Air Force must be committed to valuing and sustaining its nuclear enterprise as long as nuclear weapons are part of the U.S. arsenal. In his report, Admiral Donald suggested the Air Force, "Re-examine the Chief of Staff Recommendation Matrix that resulted from the August 2007 Minot/Barksdale nuclear weapons transfer incident to gain a more thorough understanding of the underlying systemic issues, and revise the actions accordingly."[28] The study team agrees. We believe the foremost issue is declining technical competence (expertise) in the Air Force ranks. That expertise, along with leadership, management, and cultural factors, are central to the Air Force's ability to execute its nuclear mission. Thus, we offer recommendations in the four areas of expertise, management, leadership, and culture. There are no simple solutions to these complex problems. Instead, the Air Force will need to think through the problems to determine the best avenues to mitigate them. The first step is to acknowledge that the issues remain real and urgent. More extensive discussion of the recommendations outlined below is available in the full 100+-page version of this case study, available from your JSL instructor or the Global Strike Command Chair to Air University, Col Mark Erickson.

Recommendations in Four Focused Areas: Expertise, Leadership, Management, & Culture

Expertise

The foremost issue is declining technical competence and expertise in Air Force ranks. That expertise, along with nuclear leadership, management and culture, are central to the Air Force's ability to execute its nuclear mission.

- ***Put the Nuclear Mission Back into the Hands of the "Experts"***

[28] Adm. Donald, *op cit.*, p. 54.

- Airmen must have faith in a system that values (that is, promotes) competent experts.

- One of the results of downsizing the force is that nuclear experts currently are not in the most mission-essential billets. Instead, the best and the brightest are placed in jobs that are "great for their career but terrible decisions for the Air Force." Most significantly, they are unable to influence the culture of their specialty, leaving it to founder.

- The "right" people must make the manpower decisions in order to grow expertise in the field, who will then grow to be competent leaders.

- In the past commanders handpicked their staff and major commands had more control over the upward mobility of officers. This model needs to be recreated.

- ***Reestablish Operational Competence***

  - Nuclear units must do more than prepare for inspections; they must return to a level of competence that sustains and enhances their contribution to national security.

  - The Air Force needs to determine how to grow specific and particular competencies for its future officers.

  - The Air Force should provide and encourage an educational and experiential path that leads to technical competence for Airmen who are then likely to become better nuclear commanders in the days ahead.

- ***Incentivize Change and Ensure Retention***

  - Just as leadership is not the right metric for career advancement, neither is deployability the best measurement for nuclear readiness. The concept that nuclear competence is a distinct and necessary skill must be reinstituted in Air Force personnel and supported through training and education.

Leadership

As long as the Air Force has a nuclear mission, the service needs to focus on how to develop and even inspire its leaders to advocate for the mission's fulfillment. Good leaders require technical competence in their craft. Without competence, a leader cannot have the respect of his subordinates nor will he be able to extract superior results from those under his command.

- ***Reinstitute Core Principles: Communication and Responsibility***

- Former CSAF General Fogleman explained the importance of communication to leadership skills, "Good leaders are people who have a passion to succeed…To become successful leaders, we must first learn that no matter how good the technology or how shiny the equipment, people-to-people relations get things done."

- ***Motivate Managers to Be Leaders***

  - Air Force commanders must to be taught the principles of leadership and management; then held accountable for both.

  - The Air Force needs to delineate between management and leadership skills, then foster and support the development of both.

- ***Require Responsibility at the Highest Levels***

  - Leadership requires responsibility and accountability –factors that the Air Force nuclear enterprise has lacked for the past two decades.

Management

Air Force leaders need to move stewardship into the hands of subordinates with their full understanding of responsibility, accountability and authority.

- ***Enable Nuclear Staff to Learn From Past and Focus on the Future***

  - Airmen must be required to follow checklists and procedures rigorously and without deviation until changes are approved by the respective headquarters. However, senior officers must still be open to innovative suggestions and change procedures that can be improved. Subordinates should not be discouraged from offering innovative ideas for change.

  - The Air Force needs to make the nuclear-incident investigation reports available to officers in nuclear essential billets, as most have not yet read the Minot and Taiwan investigation reports. In order to learn from the past commanders need to understand what happened and what actions have been taken to correct the errors.

- ***Re-Institute Unity of Command***

  - The split between AFGSC command and control of nuclear forces and Air Force Material Command responsibility for maintenance, storage, sustainment and custody of nuclear weapons was viewed as a violation of unity of command.

This split was considered by most study participants as untenable and requiring change.

- ***Make Change Work***

  - Over the last two decades people from the highest ranks down were "making the system work" despite its flaws, instead of demanding that it be fixed.

  - Determining appropriate metrics to measure success has always been challenging. This is even more true for nuclear organizations. The Air Force must determine the correct ways to measure success or failure as it continues to make changes to the nuclear enterprise.

Culture

A successful organization requires three elements for its people, and thus the organization itself: 1.) People need to believe in their work which is a product of inspirational leadership and self motivation; 2.) People need to see visible progress toward the organization's stated goal, no matter how incremental the improvement; and 3.) People need recognition and appreciation for their contributions toward the goal. Without these the organization will fail.

- ***Reestablish the Culture of Excellence***

  - Clarity of mission is a requirement and would go a long way in buttressing the Air Force's efforts to re-establish a culture capable of executing the mission.

  - The Air Force must analyze the culture that is being developed and shape by the current environment and determine what must be changed through the organizational development process. This may include making changes above those required in AFGSC.

- ***Explain Why the Mission is Vital***

  - The SECAF and the CSAF have made a concerted effort to show a level of continued interest not seen since the end of SAC and foster the concept of an engaged leadership. It is this level of continued support that will help shape the culture surrounding the nuclear mission.

- ***Inform Up; Educate Down***

  - The lack of understanding of nuclear deterrence, a core Air Force mission, is at the heart of the problem. Air Force leaders need to understand and explain why

the nuclear mission remains core to the Air Force. The service needs to educate Airmen on this mission and its criticality to the nation.

- In addition, the Air Force needs to educate personnel at all levels in order to influence the attitudes and actions of personnel. Additionally, the Air Force must make the most of the opportunity to influence how nuclear weapons are viewed at the national level.

CONCLUSION

- The Air Force must be committed to valuing and sustaining its nuclear enterprise as long as nuclear weapons are part of the U.S. arsenal.

- Personnel in the nuclear enterprise cannot be told that their work is valued as billets go unfilled, resources continue to wane and their supervisors continue to focus on deployments in conventional wars. This study found that resoundingly, Air Force nuclear personnel believed in their work, but they need inspiration to focus their efforts and improve their capabilities. They need advanced training, deliberate placement, leadership, and competent management.

- Without a root cause analysis of the systemic problems, much of what the Air Force has accomplished has been movement without direction or focus. Without determining the fundamental questions that need to be answered, the capability of the Air Force to sustain its nuclear capability remains in question.

The study team was tasked with identifying how the Air Force can "re-establish an environment that will revive Air Force nuclear operations standards and culture in the mid-term to long-term, beyond what has been or is being done…" To a great degree the study found that Air Force senior leadership understands the problems it faces. The Air Force has gone to great lengths to address the management and oversight of nuclear weapons, but the efforts in leadership and expertise have been underwhelming. Additionally, the problems have not been prioritized, yet efforts are underway to fix the problems writ large. It is essential that Air Force leadership understands that expertise continues to decline and that if this key area is left unaddressed all of the other substantive efforts will be undone. Addressing the expertise issue requires senior leadership to take significant action that includes spreading the vision and a willingness to drive the discussion up to OSD and Capitol Hill and down to the youngest enlisted Airmen.

According to General LeMay a successful organization requires three characteristics:

- People need to believe in their work; a product of inspirational leadership and self motivation.
- People need to see visible progress toward the organization's stated goal, no matter how incremental the improvement.
- People need recognition and appreciation for their contributions toward the goal.[29]

It is these three concepts which the future of the Air Force nuclear enterprise must aspire to attain. Personnel in the nuclear enterprise should not be simply "told" that their work is valued, as billets go unfilled, resources continue to wane, and their supervisors continue to focus on deployments in conventional wars. This study found that resoundingly, Air Force nuclear personnel believed in their work, but they need inspiration to focus their efforts and improve their capabilities. They need advanced training, deliberate placement, leadership, and competent management.

According to the 2010 National Security Strategy (NSS), one of our top national security priorities is "reducing our nuclear arsenal and reliance on nuclear weapons, while ensuring the reliability and effectiveness of our deterrent." At the same time, the NSS tasks the military to "maintain its conventional superiority and, as long as nuclear weapons exist, our nuclear deterrent capability, while continuing to enhance its capacity to defeat asymmetric threats, preserve access to the global commons, and strengthen partners." That seems like a tall order for a military that does not appear to believe in the necessity of the nuclear deterrent or hold it in esteem.

The nuclear mission requires a culture of compliance and dedicated focus by the Air Force, even as nuclear weapons numbers continue to be reduced. The two things are not in opposition. One interviewee described the atmosphere in the Reagan years as schizophrenic. While some high-level Administration officials had moral issues about the dramatic build up of weapons, they were able to deal with those issues at the personal level while maintaining their full professional commitment to implementation of Reagan's nuclear strategy. In looking to the future, the Air Force must adopt the same approach. While it is clear that the U.S. Government is drawing down its nuclear capabilities, we must be able to execute the mission. In order to have that capability, leadership must reinforce that regardless of the number, nuclear weapons are a significant national security asset that requires tremendous responsibility and accountability, at the personal, unit, and national military level.

Since 2008, the Air Force has conducted numerous investigations, established new organizations, and re-structured nuclear forces. However, without a root cause analysis of the systemic problems, much of what the Air Force has accomplished has been movement without direction or focus. The questions surrounding expertise - how to recognize it, to grow it,

[29] Tillman, p. 102, quoting Maj. TJ Crowley, *Curtis E. LeMay: The Enduring Big Bomber Man*, [U.S. Marine Corp Command and Staff College, Quantico, VA: 1986].

maintain it, and value it - have not been addressed. Without answers to these fundamental questions, the Air Force nuclear enterprise remains on the same trajectory as it has been for the last two decades –in ever-increasing decline—which places the capability of the Air Force to sustain its nuclear capability at risk.